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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,858	01/05/2001	Lawrence Yium-Chee Chiu	ARC920000054US1	3691

22462 7590 03/05/2003

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EXAMINER

MCLEAN-MAYO, KIMBERLY N

ART UNIT	PAPER NUMBER
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2187

DATE MAILED: 03/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,858

Applicant(s)

CHIU ET AL.

Examiner

Kimberly N. McLean-Mayo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-12, 14-20 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-12, 14-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. | 6) <input type="checkbox"/> Other: _____. |

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DETAILED ACTION

1. The enclosed detailed action is in response to the Amendment submitted on December 30, 2002.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4, 7, 9, 12, 15, 17, 20 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Menon et al. (USPN: 5,574,882) in view of Abe (USPN: 5,450,600).

Regarding claims 1, 4, 17 and 20, Menon discloses a method of updating parity data in a RAID clustered environment comprising locking parity data, without communicating with other nodes, for data managed in SCSI (small computer system interface) disks in a RAID clustered system (Figure 1; C 4, L 42; C 4, L 36; C 6, L 1-46), wherein locking prevents other nodes from modifying the parity (C 6, L 24-26); reading the parity data (C 6, L 27-28); generating new parity data by exclusive oring data from a first node and a second node (C 6, L 29-30); writing the parity data to a SCSI disk in the RAID system (C 6, L 31-44) and unlocking the parity wherein the unlocking and the writing steps are combined (C 6, L 45-46). Menon does not explicitly disclose combining the commands for writing and unlocking into a single command. However, Abe teaches the concept of combining commands {steps} (integrating basic commands into an integrated command) into a single command (integrated command – C 5, L 22-68; C 6, L

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1-11). Abe teaches that this feature improves command operations by simplification (C 17, L 49-50). Hence, one of ordinary skill in the art would have recognized the benefits of Abe's teachings and would have been motivated to use these teachings with the teachings of Menon for the desirable purpose of simplification.

Additionally, with respect to claim 17, Menon discloses an article of manufacture, embodying logic to perform the above method steps of updating parity data in a RAID clustered environment (C 19, L 42-55; C 20, L 1-26).

Regarding claims 7 and 23, Menon discloses a RAID 5 system (C 2, L 48-51).

Regarding claims 9 and 12, Menon discloses an apparatus (Figure 1) for updating parity data in a RAID clustered environment comprising a plurality of SCSI storage devices in a RAID clustered system (Figure 1, Reference 20); data stored in the plurality of SCSI storage devices (inherent); a first node, (host), operatively coupled to the SCSI storage devices, that manages storage and retrieval of the data in the data storage devices, wherein the first node is configured to lock parity data, without communicating with other nodes, wherein locking prevents other nodes from modifying the parity (C 6, L 24-26); reading the parity data (C 6, L 27-28); generating new parity data by exclusive oring data from a first node (new data from host) and a second node (old data stored in the storage device) (C 6, L 29-30); writing the parity data to a SCSI disk in the RAID system (C 6, L 31-44) and unlocking the parity (C 6, L 45-46). Menon does not explicitly disclose combining the commands for writing and unlocking into a single command. However,

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Abe teaches the concept of combining commands {steps} (integrating basic commands into an integrated command) into a single command (integrated command – C 5, L 22-68; C 6, L 1-11).

Abe teaches that this feature improves command operations by simplification (C 17, L 49-50).

Hence, one of ordinary skill in the art would have recognized the benefits of Abe's teachings and would have been motivated to use these teachings with the teachings of Menon for the desirable purpose of simplification.

Claim 15 is rejected for the same rationale applied to claim 7 above.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6, 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon et al. (USPN: 5,574,882) in view of Abe (USPN: 5,450,600) as applied to claims 1, 9 and 17 above and further in view of IBM Technical Disclosure Bulletin "Limited Distributed DASD Checksum".

Menon and Abe disclose the limitations cited above in claims 1, 9 and 17, however, Menon and Abe do not disclose a RAID 4 system. The IBM Technical Disclosure Bulletin discloses a RAID 4 system (Figure 1). Additionally, the IBM Technical Disclosure Bulletin discloses that adding

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or removing units to a RAID 4 system is relatively simple because the change does not affect the other units (Lines 14-16). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a RAID 4 system in the system taught by Menon and Abe for the desirable purpose of simplification (providing a simpler means for adding or removing units to the RAID system).

6. Claims 8, 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over in Menon et al. (USPN: 5,574,882) in view of Abe (USPN: 5,450,600) as applied to claims 1, 9 and 17 above and further in view of Lyons (USPN: 6,101,615).

Menon and Abe disclose the limitations cited above in claims 1, 9 and 17, however, Menon and Abe do not disclose a RAID 6 system. Lyons discloses a RAID 6 system (Figure 5). Lyons discloses that a RAID 6 system provides improved data protection by providing two parity drives (C 1, L 49-50). Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a RAID 6 system in the system taught by Menon and Abe for the desirable purpose of increased data protection and reliability.

7. Claims 2-3, 10-11 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Menon in view of (USPN: 5,574,882) and Abe (USPN: 5, 450,600) as applied to claims 1, 9 and 17 above and further in view of Ofer (USPN: 5,892,955).

Menon and Abe disclose the limitations cited above in claims 1, 9 and 17, however, Menon and Abe do not explicitly disclose the locking step comprising issuing a RESERVE command nor the unlocking step comprising issuing a RELEASE command. Ofer teaches that the standard SCSI

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RESERVE command is used to reserve/lock data storage (C 1, L 27-30). Also, Ofer discloses a SCSI system wherein the SCSI RELEASE command is used to unlock the locked storage system. The system taught by Menon and Abe is a SCSI storage system, which means the system has a RESERVE and a RELEASE command. Hence, it would be obvious to use the RESERVE command to lock the parity and to use the RELEASE command to perform the unlocking for the desirable purpose of simplification and efficiency. Using an already existing command, prevents the need to develop new designs and/or implementations to perform the locking and unlocking functionality. Therefore, it would have been obvious to one of ordinary skill in the art to use the RESERVE command to lock parity and to use the RELEASE command to unlock parity for the desirable purpose of efficiency and simplification.

Response to Arguments

8. Applicant's arguments with respect to claim have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly N. McLean-Mayo whose telephone number is 703-308-9592. The examiner can normally be reached on M-F (9:00 - 6:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do Yoo can be reached on 703-308-4908. The fax phone numbers for the

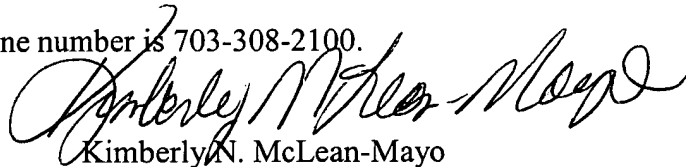
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organization where this application or proceeding is assigned are 703-746-7329 for regular communications and 703-746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2100.



Kimberly N. McLean-Mayo
Examiner
Art Unit 2187

KNM

March 1, 2003